NEW SYNONYMY AND NEW SPECIES OF AMERICAN BARK BEETLES (COLEOPTERA: SCOLYTIDAE), PART V[1]

Stephen L. Wood[2]

ABSTRACT.— New synonymy of American Scolytidae is proposed as follows: *Phloeoborus* Erichson (= *Phloeotrupes* Erichson), *Phloeotribus* Latreille (= *Eulytocerus* Blandford), *Scolytodes* Ferrari (= *Epomadius* Blandford), *Carphoborus pinicolens* Wood (= *Carphoborus tuberculatus* Bright), *Coccotrypes indicus* (Eggers) (= *Dryocoetes subimpressus* Eggers), *Coccotrypes surinamensis* Schedl (= *Coccotrypes brevipilosus* Eggers), *Conophthorus coniperda* Schwarz (= *Conophthorus clunicus* Hopkins, *Conophthorus taedae* Hopkins), *Conophthorus ponderosae* Hopkins (= *Conophthorus scopulorum* Hopkins, *Conophthorus contortae* Hopkins, *Conophthorus monticolae* Hopkins, *Conophthorus flexilis* Hopkins, *Conophthorus lambertianae* Hopkins), *Conophthorus resinosae* Hopkins (= *Conophthorus virginianae* Hopkins), *Cryphalomorphus knabi* (Hopkins) (= *Cryphalomorphus minutissimus* Schedl), *Ips grandicollis* (Eichhoff) (= *Tomicus cribricollis* Eichhoff), *Ips perturbatus* (Eichhoff) (= *Tomicus interpunctus* Eichhoff), *Ips tridens engelmanni* Swaine (= *Ips yohoensis* Swaine, *Ips semirostris* Hopping, *Ips amiskwiensis* Hopping), *Leperisinus aculeatus* (Say) (= *Hylesinus imperialis* Eichhoff), *Leperisinus californicus* Swaine (= *Leperisinus hoferi* Blackman), *Phloeosinus serratus* (LeConte) (= *Phloeosinus neotropicus* Schedl), *Phoeotribus championi* (Blandford))= *Eulytocerus substriatus* Schedl), *Pseudohylesinus sericeus* (Mannerheim) (= *Pseudohylesinus yasamatsui* Nobuchi), *Pityophthorus boycei* Swaine (= *Pityophthorus siouxensis* Bright), *Pityophthorus deletus* LeConte (= *Pityophthorus inquietus* Blackman, *Pityophthorus monophyllae* Blackman, *Pityophthorus praelatus* Bright, *Pityophthorus brucki* Bright), *Scolytus opacus* Blackman (= *Scolytus abietis* Blackman), *Scolytus tsugae* Swaine (= *Scolytus reflexus* Blackman, *Scolytus wickhami* Blackman), *Scolytus unispinosus* LeConte (= *Scolytus fiskei* Blackman). The following species are named as new to science: *Phloeotribus hirtus, P. ingae, P. levis, P. minor, P. nebulosus, P. simplicidens* (Colombia), *P. amplus, P. fici, P. squamiger, P. tetricus, P. vesculus* (Venezuela), *Pityophthorus discretus* (Mexico).

On the following pages several newly discovered cases of synonymy and species new to science are presented for American Scolytidae. The species new to science represent the genera *Phloeotribus* (12) and *Pityophthorus* (1). They are from Mexico (1), Colombia (7), and Venezuela (5).

NEW SYNONYMY

Phloeoborus Erichson

Phloeoborus Erichson, 1836, Arch. Naturgesch. 2(1): 54 (Type-species: *Phloeoborus rudis* Erichson, subsequent designation by Hopkins, 1914, Proc. U.S. Nat. Mus. 48: 126).

Phloeotrupes Erichson, 1836, Arch. Naturgesch. 2(1): 53 (Type-species: *Phloeotrupes grandis*, subsequent designation by Hopkins, 1914, Proc. U.S. Nat. Mus. 48: 127). *New synonymy*

The holotype and 21 other specimens of *Phloeoborus rudis* Erichson, the holotype and two other specimens of *Phloeotrupes grandis* Erichson, and 10 other species in this complex were examined and compared to one another. The characters of the tibiae, antennae, and palpi on which the separation of genera was based, are so variable that no combination of them will distinguish genera. I propose that they be placed in synonymy. Although the name *Phloeotrupes* has page priority, I exercise the option of the first revisor and select *Phloeoborus* as the valid name for the genus, because it is much more widely known in the literature and has been applied to a much larger number of species.

Phloeotribus Latreille

Phloeotribus Latreille, 1796, Précis des caractères génériques des insects, p. 50 (Type-species: *Hylesinus oleae* Fabricius = *Scolytus scarabaeoides* Bernard, subsequent inclusion by Latreille, 1802/3, Histoire naturelle, generale et particulaere des Crustacés et des Insects 3: 203; spelling emendation from *Phloiotribus*, Latreille, 1804, Mag. f. Insekenk. 3: 108)

Eulytocerus Blandford, 1897, Biol. Centr. Amer., Coleopt. 4(6): 161 (Type-species: *Eulytocerus championi* Blandford, monobasic). *New synonymy*

The holotype of *Eulytocerus championi* Blandford was examined and was found to

[1]Part of the research was sponsored by the National Science Foundation.

[2]Life Science Museum and Department of Zoology, Brigham Young University, Provo, Utah 84602. Scolytidae contribution no. 65.

be congeneric with *Phloeotribus* Latreille. All characters of apparent generic value in *championi* are shared by most species of *Phloeotribus*.

Scolytodes Ferrari

Scolytodes Ferrari, 1867, Die Forst- und Baumzuchtschädlichen Borkenkäfer, p. 77 (Type-species: *Scolytodes laevigatus* Ferrari, monobasic)

Epomadius Blandford, 1897, Biol. Centr. Amer., Coleopt. 4(6): 179 (Type-species: *Epomadius culcitatus* Blandford, monobasic). *New synonymy*

Both female syntypes of *Epomadius culcitatus* Blandford were examined. The only unique character on which the genus *Epomadius* was based was the conspicuous pilose impression on each side of the prothorax. There are no other significant characters that separate this species from *Scolytodes*. While the species *culcitatus* is unique, it must be transferred to *Scolytodes* where allied species are placed.

Carphoborus pinicolens Wood

Carphoborus pinicolens Wood, 1954, Canadian Ent. 85: 512 (Holotype, female; Logan Dry Canyon, Utah; U.S. Nat. Mus.)

Carphoborus tuberculatus Bright, 1964, Pan Pacific Ent. 40: 165 (Holotype, female; Crooked Creek, White Mts., Mono Co., California; California Acad. Sci.). *New synonymy*

The large type series of *Carphoborus pinicolens* Wood and the holotype and 48 paratypes of *C. tuberculatus* Bright were examined and compared to one another. The tubercle at the center of the frons in *tuberculatus* is represented in only 77 percent of the females in the type series; it is also present in 70 percent of the females in the type series of *pinicolens*. For this reason, because no other characters distinguish these populations, and since there is continuous distribution between the type localities of this widely distributed species, Bright's name must be placed in synonymy.

Coccotrypes indicus (Eggers)

Thamnurgides indicus Eggers, 1936, Ann. Mag. Nat. Hist. (10)17: 631 (Holotype, female; Sakalaspur, Mysore, India; British Mus. Nat. Hist.)

Dryocoetes subimpressus Eggers, 1940, Arb. Morph. Tax. Ent. Berlin-Dahlem 7: 127 (Holotype, female; Trois Rivières, Guadeloupe; deposited in Eggers Collection, apparently on loan to Schedl). *New synonymy*

The holotype of *Dryocoetes subimpressus* Eggers is a female of *indicus* (Eggers) having a normal head, prothorax, the lateral parts of the elytra, and ventral parts. The median areas of the elytral disc and declivity have the interstriae and spaces between the strial punctures in each row abnormally roughened and distorted. The distortion is similar to that seen in specimens injured by siblings during the pupal stage. Since this is an aberration of a recognizable common species, the name *subimpressus* must be placed in synonymy.

Coccotrypes surinamensis Schedl

Coccotrypes surinamensis Schedl, 1949 (1948), Tijdscr. Ent. 91: 116 (Syntypes; Surinam; Zool. Mus. Amsterdam and Schedl Coll.)

Coccotrypes brevipilosus Eggers, 1951, Ent. Blatt. 45-46: 150 (Holotype, female; Blumenau, Brazil; deposited in Eggers Coll., presumably on loan to Schedl). *New synonymy*

Four specimens, presumably syntypes, of *Coccotrypes surinamensis* Schedl exhibit variability in length of the interstrial setae from very short to normal length for this genus. In one of the specimens these setae, although a bit less consistent in length, are almost indentical to the very short setae on the holotype of *C. brevipilosus* Eggers. Two of the specimens are intermediate between *brevipilosus* and *C. surinamensis* and the fourth specimen is virtually indistinguishable from *surinamensis*. Since virtually all American *Coccotrypes* are known to have been introduced from Africa or the Indo-Australian region, it is very likely that the suspected synonymy with *sundaensis* (Eggers, 1923) will be established as soon as adequate material is available for study. The entire genus *Coccotrypes* is in a state of taxonomic chaos because so many "species" have been named from extraterritorial (introduced) populations without any apparent attempt to establish their origins that identification of most of them is virtually impossible.

Conophthorus coniperda (Schwarz)

Pityophthorus coniperda Schwarz, 1895, Proc. Ent. Soc. Washington (Lectotype, male; Marquette, Michigan; U.S. Nat. Mus., present designation)

Conophthorus clunicus Hopkins, 1915, J. Washington Acad. Sci. 5: 432 (Holotype, female; 13, 122, *To-*

micus clunicus Fitch, Det. No. 12 Hopk., Collection Fitch; U.S. Nat. Mus.). *New synonymy*

Conophthorus taedae Hopkins, 1915, J. Washington Acad. Sci. 5: 431 (Holotype, sex?; Ft. Monroe, Va.; U.S. Nat. Mus.). *New synonymy*

Of the three syntypes of *Pityophthorus coniperda* Schwarz examined at the U.S. National Museum, two are from Marquette and one is from Eagle Harbor, Michigan. I here designate a male syntype from Marquette as the lectotype of *Pityophthorus coniperda* Schwarz. These three syntypes were compared to the holotypes of *C. clunicus* Hopkins and *C. taedae* Hopkins and to 113 other specimens. Only one species is represented by this material. The smaller size, steeper elytral declivity, tuberculate declivital interstriae 1, and other characters clearly distinguish it from the allied *resinosae* Hopkins.

Conophthorus ponderosae Hopkins

Conophthorus ponderosae Hopkins, 1915, J. Washington Acad. Sci. 5: 431 (Holotype, female; Ashland, Oregon; U.S. Nat. Mus.)

Conophthorus scopulorum Hopkins, 1915, J. Washington Acad. Sci. 5: 431 (Holotype, female; Flagstaff, Arizona; U.S. Nat. Mus.). *New synonymy*

Conophthorus contortae Hopkins, 1915, J. Washington Acad. Sci. 5: 432 (Holotype, female; Newport, Oregon; U.S. Nat. Mus.). *New synonymy*

Conophthorus monticolae Hopkins, 1915, J. Washington Acad. Sci. 5: 432 (Holotype, female; Priest River, Idaho; U.S. Nat. Mus.). *New synonymy*

Conophthorus flexilis Hopkins, 1915, J. Washington Acad. Sci. 5: 433 (Holotype female; Mount Manitou, Colorado; U.S. Nat. Mus.). *New synonymy*

Conophthorus lambertianae Hopkins, 1915. J. Washington Acad. Sci. 5: 433 (Holotype, female; Hilt, California; U.S. Nat. Mus.). *New synonymy*

The female holotypes of *Conophthorus ponderosae* Hopkins, *C. scopulorum* Hopkins, *C. contortae* Hopkins, *C. monticolae* Hopkins, *C. flexilis* Hopkins, and *C. lambertianae* Hopkins were compared directly to one another and studied in conjunction with 784 other specimens. Although a limited amount of variability occurs in all series, I see no basis for recognizing more than one species from this material. Because the name *ponderosae* has been used more widely in the literature, it was selected to designate this species. In view of the sibling species *resinosae* and *banksianae* that are distinguishable only from their habits there is a possibility that sibling species occur in the material treated here as *ponderosae.* Extensive biological work will be required to determine whether or not this is the case.

Conophthorus resinosae Hopkins

Conophthorus resinosae Hopkins, 1915, J. Washington Acad. Sci. 5: 431 (Holotype, male; Conoph. resinosae Hopkins, 1 Harring., *Conophthorus resinosae*; U.S. Nat. Mus.)

Conophthorus virginianae Hopkins, 1915, J. Washington Acad. Sci. 5: 431 (Holotype, male, not a female as labeled; Huttonsville, West Virginia; U.S. Nat. Mus.). *New synonymy*

The male holotypes of *Conophthorus resinosae* Hopkins and *C. virginianae* Hopkins were compared directly to one another and were studied with 166 other specimens. Although minor variation exists in this material, only one species is represented. It is distinguished from the allied *C. coniperda* (Schwarz) by characters listed above under that species. Except for size and host I see no means of distinguishing it from *C. banksianae* McPherson, although both appear to be valid species.

Cryphalomorphus knabi (Hopkins)

Ernoporides knabi Hopkins, 1915, Dept. Agric. Rept. 99: 34 (Holotype, female; Cordoba, Mexico; U.S. Nat. Mus.)

Cryphalomorphus minutissimus Schedl, 1951, Dusenia 2: 97 (Holotype male; Env. de Trois Rivières, Guadeloupe; Schedl Coll.). *New synonymy*

The male holotype of *Cryphalomorphus minutissimus* Schedl is somewhat smaller than average for the species and the basal half of the elytra have been rubbed, but there is no doubt that it represents *C. knabi* (Hopkins), a very common and widely distributed species in the Caribbean region. The type of *minutissimus* when received on loan for study had fallen from its mount and was crushed between the wall and pinning surface of the shipping box. The fragments were recovered and re-mounted by me; no other possible contaminating parts were in the box.

Ips grandicollis (Eichhoff)

Tomicus grandicollis Eichhoff, 1868, Berliner Ent. Zeitschr. 11: 402 (Syntypes; Amerique boreali; presumably lost with Hamburg Mus.)

Tomicus cribricollis Eichhoff, 1869, Berliner Ent.

Zeitschr. 12: 273 (Holotype, male; Mexico; Brussels Mus.). *New synonymy*

This species is easily recognized from the description, although the type series of *Tomicus grandicollis* Eichhoff is lost. More than 1,000 specimens from the United States and eastern Canada were examined in addition to the holotype of *Tomicus cribricollis* Eichhoff and about 500 specimens from Mexico and Central America. Although geographical variation is apparent, it does not appear to be correlated with characters reported by Lanier (1970, Canadian Ent. 102: 1151) nor can I confirm all of the characters he used to distinguish *grandicollis* and *cribricollis*. Until a more comprehensive analysis can be made, *cribricollis* should be regarded as a junior synonym of *grandicollis*.

Ips perturbatus (Eichhoff)

Tomicus perturbatus Eichhoff, 1869, Berliner Ent. Zeitschr. 12: 274 (Syntypes?; Amerique boreali; presumably lost with Hamburg Mus.)

Tomicus interpunctus Eichhoff, 1878, preprint of Mém. Soc. Roy. Sci. Liége (2)8: 241 (Syntypes?; Sitka, Alaska; presumably lost with Hamburg Mus.). *New synonymy*

The type series of both *Tomicus perturbatus* Eichhoff and *T. interpunctus* Eichhoff were lost when the Hamburg Museum was destroyed. Prior to that time Eichhoff had examined part of the original series of *T. hudsonicus* LeConte and referred them to *perturbatus*. The identity of *interpunctus* has not been clarified. According to the original description, *interpunctus* was 4.0 mm long, it had a pair of transversely arranged tubercles near the center of the frons, and the basal parts of the interstriae were impunctate. The only Sitka *Ips* of this size, with paired frontal tubercles and basally impunctate interstriae is *perturbatus*. It is also the most common *Ips* in the Sitka area. Although *pini* (Say) has frontal tubercles in some parts of its range, it does not have them in areas adjacent to Sitka and there are no records of it from Sitka. For these reasons, *interpunctus* is placed in synonymy under *perturbatus*.

Ips tridens engelmanni Swaine

Ips engelmanni Swaine, 1917, Dom. Canada Dept. Agric. Ent. Br. Tech. Bull. 14(1): 30 (Lectotype, female; Rogers Pass, British Columbia; Canadian Nat. Coll., designated by Bright, 1967, Canadian Ent. 99: 675)

Ips yohoensis Swaine, 1917, Dom. Canada Dept. Agric. Ent. Br. Tech. Bull. 14(1): 31 (Lectotype, female; Yoho Valley, British Columbia; Canadian Nat. Coll. designated by Bright, 1967, Canadian Ent. 99: 676). *New synonymy*

Ips semirostris Hopping, 1963, Canadian Ent. 95: 213 (Holotype, female; Kenai Penninsula, Alaska; Canadian Nat. Coll.). *New synonymy*

Ips amiskwiensis Hopping, 1963, Canadian Ent. 95: 216 (Holotype, female; Amiskwi River Yoho Nat. Pk., British Columbia; Canadian Nat. Coll.). *New synonymy*

The types and most of the type series of *Ips engelmanni* Swaine, *I. yohoensis* Swaine, *I. semirostris* Hopping, and *I. amiskwiensis* Hopping and 580 other specimens of this species were examined and compared. The female frons is unusually variable and appears in forms varying from almost uniformly convex to moderately protuberant to exceedingly protuberant, with or without abundant vestiture. The various forms may appear in pure or mixed series and are known to be morphological expressions of various gene combinations and do not express specific differences.

Leperisinus aculeatus (Say)

Hylesinus aculeatus Say, 1824, J. Acad. Nat. Sci. Philadelphia 3: 322 (Syntypes?; Missouri; evidently lost)

Hylesinus imperialis Eichhoff, 1868, Berliner Ent. Zeitschr. 12: 149 (Syntypes; Wisconsin and Georgia; lost with Hamburg Mus.). *New synonymy*

LeConte's series of *Hylesinus aculeatus* Say was either part of the Say series or was compared to it; his series of *H. imperialis* Eichhoff was either part of Eichhoff's series or was compared to it. Both of LeConte's series are of the same species. The size, descriptions, and distributions are such that there is virtually no question that both names apply to the same species. In view of these facts and since *imperialis* has been a doubtful species since it was first proposed, these names are considered synonymous.

Leperisinus californicus Swaine

Leperisinus californicus Swaine, 1916, Canadian Ent. 48: 190 (Holotype, female; San Diego, California; Canadian Nat. Coll.)

Leperisinus hoferi Blackman, 1943, Proc. U.S. Nat. Mus. 93: 394 (Holotype, female; Sabino Canyon, Arizona; U.S. Nat. Mus.). *New synonymy*

The holotypes of *Leperisinus californicus* Swaine and *L. hoferi* Blackman and 242 other specimens from Oregon and North Dakota to California and Chihuahua were examined and compared. From this material it is apparent that only one species is present. Apparently Blackman was not familiar with Swaine's species when *hoferi* was named.

Phloeosinus serratus LeConte

Hylesinus serratus LeConte, 1868, Trans. Amer. Ent. Soc. 2: 170 (Holotype, male; Middle States; Mus. Comp. Zool.

Phloeosinus neotropicus Schedl, 1939, Proc. Roy. Ent. Soc. London 8(1): 12 (Holotype, female; Jamaica; British Mus. Nat. Hist.). *New synonymy*

The male holotype of *Hylesinus serratus* LeConte was examined and compared to several examples of my specimens. It represents a common species from Washington and Idaho to Durango (Mexico) and Texas. The female holotype of *Phloeosinus neotropicus* Schedl was examined, but, as is the case with many female *Phloeosinus*, it could not be associated with any other material at that time. The male "paratype" in the Schedl collection, however, is an easily diagnosed normal specimen of *serratus*. Once this association was made, the female holotype could then be placed as a synonym of *serratus*. There is doubt as to whether or not this species is established in Jamaica.

Phloeotribus championi (Blandford), n. comb.

Eulytocerus championi Blandford, 1897, Biol. Centr. Amer., Coleopt. 4(6): 161 (Holotype, male; Volcan de Chiriqui, Chiriqui, Panama; British Mus. Nat. Hist.)

Eulytocerus substriatus Schedl, 1935, Rev. de Ent. 5: 344 (Holotype, male; Turrialba, Costa Rica; Schedl Coll.). *New synonymy*

The male holotypes of *Eulytocerus championi* Blandford, length 3.7 m, and *E. substriatus* Schedl, length 3.6 mm, were compared directly to one another. Although the frontal setae of the former are slightly longer and the interstrial punctures of the latter are slightly deeper, the differences appear insignificant. Only one species can be recognized in this material; consequently, Schedl's name is placed in synonymy.

Pseudohylesinus sericeus (Mannerheim)

Hylesinus sericeus Mannerheim, 1843, Bull. Soc. Imp. Nat. Moscou 16(2): 296 (reprint p. 124) (Holotype, female; Alaska; Univ. Zool. Mus., Helsinki)

Pseudohylesinus yasamatsui Nobuchi, 1971, Bull. Gov. For. Expt. Sta., Tokyo 238: 160 (Holotype, male; Takanishi, Nagano, Japan; Gov. For. Expt. Sta., Tokyo). *New synonymy*

Two paratypes of *Pseudohylesinus yasamatsui* Nobuchi in the Canadian National Collection are identical to my series of *sericeus* (Mannerheim) two of which were compared to the holotype at the Helsinki Museum by me. Nobuchi's name therefore, must be placed in synonymy. This is the first reported introduction of a member of this genus outside of western North America.

Pityophthorus boycei Swaine

Pityophthorus boycei Swaine, 1925, Canadian Ent. 57: 192 (Holotype, male; Cisco, Placer Co., California; Canadian Nat, Coll.)

Pityophthorus siouxensis Bright, 1977, Great Basin Nat. 36: 439 (Holotype, female; Black Hills, South Dakota; Canadian Nat. Coll.). *New synonymy*

The type series of *Pityophthorus boycei* Swaine, *P. catulus* Blackman, *P. iniquus* Blackman, and *P. siouxensis* Bright and 133 other specimens from British Columbia and California eastward to South Dakota and Colorado were examined and compared directly to one another. Although slight variation within and between series is evident, it is clear that only one species is represented by this material.

Pityophthorus delectus LeConte

Pityophthorus deletus LeConte, 1879, U.S. Dept. Interior, Geol., Geogr. Surv. Bull. 5: 519 (Lectotype, female; Veta Pass, Colorado; Mus. Comp. Zool., designated by Bright, 1976, Coleopt. Bull. 30: 185)

Pityophthorus inquietus Blackman, 1928, New York St. Coll. For., Syracuse, Tech. Pub. 25: 46 (Holotype, female; Las Vegas Hot Springs, New Mexico; U.S. Nat. Mus.). *New synonymy*

Pityophthorus monophyllae Blackman, 1928, New York St. Coll. For., Syracuse, Tech. Pub. 25: 47 (Holotype, female; Argus Mts., California; U.S. Nat. Mus.). *New synonymy*

Pityophthorus praelatus Bright, 1966, Pan Pacific Ent.

42: 303 (Holotype, female; Mt. Shasta Ski Area, Siskiyou Co., California; California Acad. Sci.). *New synonymy*

Pityophthorus brucki Bright, 1971, Pan Pacific Ent. 47: 63 (Holotype, female; San Bernardino, California; Ohio State Univ. Coll.). *New synonymy*

Two syntypes of *Pityophthorus deletus* LeConte, the holotypes and most of the type series of *P. inquietus* Blackman, *P. monophyllae* Blackman, and *P. brucki* Bright, and two paratypes of *P. praelatus* Bright, and more than 400 other specimens were studied and compared directly to one another and to examples of my material. Variations in the female frons are conspicuous and are partly associated with geographic origin. The type series of *monophyllae*, from the Argus Mountains, California, and a series from Beaver, Utah contain some females with very long and others with very short or no frontal setae. Series from San Bernardino and Ventura counties, California contained females with the frons very strongly, extensively flattened in various patterns and with long hair in a variety of arrangements. In view of the limited material available from California and the conspicuous variability within and between series in the remainder of the range, from South Dakota to Durango (Mexico) and westward, it is considered advisable to treat all of this material as one species until a comprehensive analysis can be made.

Scolytus opacus Blackman

Scolytus opacus Blackman, 1934, U.S. Dept. Agric. Tech. Bull. 431: 20 (Holotype, male; Ouray, Colorado; U.S. Nat. Mus.)

Scolytus abietis Blackman, 1934, U.S. Dept. Agric. Tech. Bull. 431: 21 (Holotype, male; Sandpoint, Idaho; U.S. Nat. Mus.). *New synonymy*

The male holotypes of *Scolytus opacus* Blackman and *S. abietis* Blackman and more than one hundred other specimens were compared directly to one another. Specimens from the Pacific Coast states and northern Idaho have the spine on male sternum 2 slightly smaller, with the summit more narrowly rounded and its crest acute and with the vertex of the head more strongly convex. Some males from the southern Rocky Mountain area have the summit of the spine on sternum 2 flattened or sulcate and the vertex less strongly convex. Since the types of *opacus* and *abietis* represent the extremes in these characters and because both characters intergrade in series from intermediate localities, it is necessary to place one of the names in synonymy. The name *opacus* was selected as the name to be used for this species.

Scolytus tsugae Swaine

Scolytus tsugae Swaine, 1917, Dom. Canada Dept. Agric. Ent. Br. Tech. Bull. 14(1): 32 (Lectotype, female; Glacier, British Columbia; Canadian Nat. Coll., designated by Bright, 1967, Canadian Ent. 99: 674)

Scolytus reflexus Blackman, 1934, U.S. Dept. Agric. Tech. Bull. 431: 13 (Holotype, male; Santa Catalina Mts., Arizona; U.S. Nat. Mus.). *New synonymy*

Scolytus wickhami Blackman, 1934, U.S. Dept. Agric. Tech. Bull. 431: 13 (Holotype, male; Buena Vista, Colorado; U.S. Nat. Mus.). *New synonymy*

In an earlier paper, I (Wood, 1966, Great Basin Nat. 26: 30) placed *Scolytus monticolae* Swaine in *synonymy* under *S. tsugae* Swaine. The examination of the holotypes of *S. reflexus* Blackman and *S. wickhami* Blackman and more than 100 other specimens from eastern Washington and northern Idaho to Arizona leaves little doubt that only one species exists in this area. However, this poulation forms a longitudinal parental gallery, while the coastal form apparently forms a transverse one. The absence of significant morphological characters suggests that only one species is represented by this material and that *reflexus* and *wickhami* must be placed in *synonymy*. The apparent difference in galleries suggests the necessity for a critical reexamination of this species as soon as adequate material for study is available.

Scolytus unispinosus LeConte

Scolytus unispinosus LeConte, 1876, Proc. Amer. Philos. Soc. 15: 372 (Lectotype, male; Oregon; Mus. Comp. Zool., present designation)

Scolytus fiskei Blackman, 1934, U.S. Dept. Agric. Tech. Bull. 431: 25 (Holotype, male; Capitan Mts., New Mexico; U.S. Nat. Mus.). *New synonymy*

The male syntype of *Scolytus unispinosus* in the LeConte collection that is labeled "type" is here designated as the lectotype of LeConte's name *unispinosus*. That lectotype, the holotype of *S. fiskei* Blackman,

and 164 other specimens from British Columbia to Arizona were examined. Although slight geographical differences are apparent, individual variation within series is such that it is impossible to recognize geographical races or species. Therefore, *fiskei* must be placed in synonymy under the senior name, *unispinosus*.

NEW TAXA

Phloeotribus tetricus, n. sp.

This species is distinguished from *venezuelensis* Schedl by the larger average size, by the larger, deeper pronotal punctures, and by differences in the frons, elytra, and vestiture noted below.

MALE.— Length 1.8 mm (paratypes 1.7-2.1 mm), 1.8 times as long as wide; color reddish brown.

Frons transversely impressed slightly above level of antennal insertion, convex above, with a large, subfoveate impression on median fourth, lower area shallowly, rather broadly impressed, epistomal margin rather broadly, acutely carinate, carina low, indefinite laterally; surface shining, upper area coarsely punctured, rugose-reticulate in interspaces, lower area reticulate, with a few fine punctures; vestiture inconspicuous. Antenna about as in *venezuelensis*.

Pronotum similar to *venezuelensis* except punctures coarser, deeper, vestiture more slender. Anterolateral areas unarmed in both species.

Elytra similar to *venezuelensis* except strial punctures considerably larger, deeper, interstriae half as wide as striae, tubercles on odd-numbered interstriae larger, high, narrow, pointed, continuing to lower half of declivity, those on even-numbered interstriae obsolete except near base, vestiture more abundant, more slender, a few on central row of each interstriae longer.

FEMALE.— Similar to male except lower half of frons almost flat, carina not clearly evident, transverse impression less conspicuous.

TYPE LOCALITY.— La Carbonera Experimental Forest, about 50 km (airline) NW Merida, Merida, Venezuela.

TYPE MATERIAL.— The male holotype, female allotype, and 25 paratypes were taken at the type locality on 27-X-1969, 2500 m, No. 93, from the bole of *Eschweilera* sp., by me. Two paratypes were taken at the same locality on 12-I-1970, from a woody vine, by me. The holotype, allotype, and paratypes are in my collection.

Phloeotribus ingae, n. sp.

This species is distinguished from *simplex* Wood by the smaller size, by the absence of reticulation on the pronotum, by the less strongly impressed striae and strial punctures, and by the more slender elytral setae.

MALE.— Length 1.5 mm (paratypes 1.4-1.7 mm), 2.0 times as long as wide; color brown.

Frons broadly, deeply concave from epistoma to upper level of eyes, lateral margins subcostate on lower half; surface smooth, shining, punctures small, rather sparse; vestiture short, rather sparse, inconspicuous.

Pronotum as in *simplex* except surface smooth, shagreened, without any reticulation, punctures more sharply, rather shallowly impressed.

Elytra as in *simplex* except surface slightly shagreened, strial punctures slightly smaller, interstriae one and one-half times as wide as striae, interstrial tubercles smaller in diameter, higher, vestiture slightly more slender, of similar length and abundance, strial punctures on declivity much smaller, less strongly impressed.

FEMALE.— Similar to male except frons almost flat on lower half, convex above, punctures moderately coarse, shallow.

TYPE LOCALITY.— Bugo, Columbia.

TYPE MATERIAL.— The male holotype, female allotype, and 101 paratypes were taken at the type locality on 16-V-1973, from two pods of *Inga* sp., by G. Ekis.

The holotype, allotype, and paratypes are in my collection.

Phloeotribus simplicidens, n. sp.

This species is distinguished from *ingae* Wood by the much more deeply impressed male frons, by the finer punctures and deep median fovea on the female frons, and by other characters described below.

MALE.— Length 1.8 mm (paratypes 1.7-

1.9 mm), 2.0 times as long as wide; color yellowish brown.

Frons as in *ingae* except impression distinctly deeper, its surface reticulate.

Pronotum as in *ingae* except surface contour more uniform, punctures slightly larger, deeper.

Elytra as in *ingae* except strial punctures slightly larger, interstrial tubercles smaller, vestiture finer; interstrial tubercles on declivity almost obsolete on lower half.

FEMALE.— Similar to male except frons convex; as in female *ingae* except punctures very small, central area with a large, deep fovea.

TYPE LOCALITY.— Finca La Hermosa, Salento, Caldas, Colombia.

TYPE MATERIAL.— The male holotype, female allotype, and eight paratypes were taken at the type locality on 1-VI-1959, en guamo, by J. A. Garzon.

The holotype, allotype, and paratypes are in my collection.

Phloeotribus amplus, n. sp.

This species apparently represents a unique species group within the genus. It is distinguished by the large size, rather slender form, simple male frons, asperate pronotum and simple elytra. It may be remotely related to the *setulosus* group of species.

MALE.— Length 3.3 mm (paratypes 3.3-3.8 mm), 2.1 times as long as wide; color dark brown.

Frons with a large, strong, median fovea two-thirds distance from epistoma to upper level of eyes, lower area shallowly impressed, smooth, shining, closely, finely punctured, upper area convex, rather coarsely punctured, with a few small, isolated tubercles; vestiture sparse, inconspicuous. Each segment of antennal club about three times as wide as long.

Pronotum 0.8 times as long as wide; widest at base, sides accurately converging toward rather broadly rounded anterior margin; surface shining, rather finely, densely asperate except basal third on median half closely, rather coarsely, deeply punctured. Vestiture short, fine, moderately abundant.

Elytra 1.4 times as long as wide, 2.0 times as long as pronotum; sides straight and parallel on basal two-thirds, rather narrowly rounded behind; striae moderately impressed, punctures coarse, deep, very close; interstriae as wide as striae, shining, uniseriately crenulate except confused near base on 1 and 3, crenulations each half as wide as interstriae, transversely, acutely, moderately elevated, submarginal ones at base larger. Declivity steep, convex; striae and interstriae about half as wide as on disc, crenulations narrower, forming acutely pointed, small tubercles, interstriae 9 slightly elevated, more strongly serrate. Vestiture of uniseriate rows of fine interstrial setae, each seta equal in length to three-fourths distance between rows.

FEMALE.— Similar to male except frons convex, with a distinct transverse impression and a conspicuous median fovea near middle.

TYPE LOCALITY.— La Carbonera Experimental Forest, 50 km (airline) northwest Merida, Merida, Venezuela.

TYPE MATERIAL.— The male holotype, female allotype, and 10 paratypes were taken at the type locality on 14-X-69, 2500 m, No. 59, from the bole of a large unidentified tree, by me.

The holotype, allotype, and paratypes are in my collection.

Phloeotribus nebulosus, n. sp.

Although this species apparently belongs to the *setulosus* group, it lacks an epistomal male carina, the male scape is less densely setose, and declivital interstriae 9 is less strongly elevated than in most representatives of the group.

MALE.— Length 1.9 mm (paratypes 1.7-2.0 mm), 1.9 times as long as wide; color very dark brown, almost black.

Frons shallowly concave from epistoma almost to upper level of eyes, a transverse impression with a median fovea somewhat deeper two-thirds of distance from epistoma to upper level of eyes; epistomal carina not indicated; surface strongly reticulate, a few small, obscure punctures and granules on upper third; vestiture sparse, short, inconspicuous. Antenna about as in *setulosus*

Eichhoff except long setae on scape about one-third as numerous.

Pronotum about as in *setulosus* except asperities smaller, punctures on basal half larger, more clearly impressed, vestiture much finer.

Elytra 1.3 times as long as wide, 1.9 times as long as pronotum; much as in *setulosus* except interstriae slightly impressed at base, moderately impressed on posterior half of disc, punctures coarse, deep; interstriae as wide as striae, crenulations narrower than in *setolosus;* declivital sculpture about as on disc except striae and interstriae slightly narrower, tubercles narrower, pointed; declivital interstriae 9 much less strongly elevated than in *setulosus*, moderately high, rather coarsely, closely tuberculate. Vestiture of uniseriate rows of fine bristles, each slightly shorter than distance between rows.

FEMALE.— Similar to male except frons convex, strongly reticulate, obscure punctures of moderate size indicated, a median fovea slightly above middle.

TYPE LOCALITY.— Piedras Blancas, 11 km west of Medellin, Antioquia, Colombia.

TYPE MATERIAL.— The male holotype, female allotype, and 126 paratypes were taken at the type locality on 17-VII-1970, 2300 m, No. 693, from *Croton guianensis,* by me.

The holotype, allotype, and paratypes are in my collection.

Phloeotribus minor, n. sp.

This species is distinguished from *armatus* Blandford by the much smaller size and by numerous characters described below.

MALE.— Length 1.3 mm (paratypes 1.2-1.4 mm), 2.1 times as long as wide; color very dark brown.

Frons as in *armatus* except less strongly impressed, epistomal carina less strongly elevated.

Pronotum as in *armatus* except sculpture slightly finer.

Elytra as in *armatus* except striae much less strongly impressed, punctures more clearly defined, more distinctly impressed, interstrial crenulations not as high or as coarse, declivital sculpture much finer, interstriae 9 only moderately elevated, much less strongly, less closely serrate, vestiture much finer.

FEMALE.— Similar to male except frons convex, with an indefinite central fovea, surface reticulate, punctures shallow, obscure, moderately coarse; asperities on anterolateral areas of pronotum usually larger; declivital interstriae 2 and 4 sometimes with a few tubercles.

TYPE LOCALITY.— Twenty-seven km northeast of Montoya, Santander, Colombia.

TYPE MATERIAL.— The male holotype, female allotype, and 36 paratypes were taken at the type locality on 2-VII-1970, 150 m, No. 601, from a *Pseudoolmedia* limb, by me. *Cladoctonus boliviae* Wood was using the entrance tunnels of this species to gain access to the cambium region.

The holotype, allotype, and paratypes are in my collection.

Phloeotribus remorsus, n. sp.

This species is distinguished from *setulosus* Eichhoff by the much larger size, by the dull, uniformly, strongly reticulate pronotum, and by other characters described below.

MALE.— Length 2.9 mm (paratypes 2.4-3.2 mm), 1.7 times as long as wide; color dark brown.

Frons as in *setulosus* except slightly higher, slightly narrower, reticulation more uniform more strongly impressed.

Pronotum as in *setulosus* except surface dull, uniformly, strongly reticulate, punctures very small, inconspicuous.

Elytra as in *setulosus* except strial punctures smaller, less sharply defined, declivital tubercles on interstriae 3, 5, and 7 slightly larger, almost obsolete on 6 and 8, 9 more acutely elevated.

FEMALE.— Similar to male except irregularly convex, uniformly, strongly reticulate, punctures and central fovea obscure; anterolateral crenulations on pronotum larger.

TYPE LOCALITY.— Piedras Blancas, 10 km east Medellin, Antioquia, Colombia.

TYPE MATERIAL.— The male holotype, female allotype, and 80 paratypes were taken at the type locality on 15-VII-1970, 2500 m, No. 654, from a *Quercus humboldtii* branch, by me.

The holotype, allotype, and paratypes are in my collection.

Phloeotribus vesculus, n. sp.

This species may be remotely allied to *squamatus* Wood, but it is distinguished by the stouter body form, by the obscure lateral asperities on the pronotum, and by other characters described below.

FEMALE.— Length 1.3 mm, 1.9 times as long as wide; color very dark brown.

Frons convex, strongly reticulate, a pair of calluses on median two-thirds slightly above level of antennal insertion. Segments of antennal club slightly more than twice as wide as long.

Pronotum about as in *squamatus* except anterior constriction obsolete, a few obscure crenulations in lateral areas; surface uniformly reticulate, punctures very shallow, coarse. Setae short, coarse, each widest on its distal half.

Elytra 1.2 times as long as wide, 1.6 times as long as pronotum; sides straight and parallel on basal two-thirds, very broadly rounded behind; striae not impressed except 1 weakly, punctures coarse moderately deep, close; interstriae slightly narrower than striae, shining, with moderately abundant fine, confused punctures, each with a uniseriate row of pointed tubercles, tubercles spaced by distance equal to width of an interstriae. Declivity very steep convex; striae and interstriae narrower than on disc; tubercles obsolete on interstriae 1 and 2. Vestiture consisting of interstrial rows of erect bristles; each bristle stout, widest on its distal half, about six times as long as wide, about two-thirds as long as distance between rows.

TYPE LOCALITY.— Five km west of El Pino, Zulia, Venezuela.

TYPE MATERIAL.— The female holotype was taken at the type locality on 20-X-1969, 10 m, No. 140, from an *Ochroma* branch, by me.

The holotype is in my collection.

Phloeotribus levis, n. sp.

This species apparently is distantly allied to *squamatus* Wood but is distinguished by the impressed striae, slender interstrial setae, and many other characters.

MALE.— Length 1.5 mm (paratypes 1.7 mm), 2.1 times as long as wide; color very dark brown.

Frons moderately concave from epistoma to upper level of eyes, sulcus narrower and deeper near middle, lateral margins and epistoma not elevated or armed; surface reticulate, obscurely so on lower half; vestiture short, fine, sparse. Segments of antennal club about four times as wide as long.

Pronotum about as in *squamatus* except surface reticulate, punctures moderately coarse, sharply, shallowly impressed, spaced by one-half to three diameters of a puncture. Vestiture of fine, short, inconspicuous hairlike setae.

Elytral outline about as in *squamatus;* striae impressed, moderately near base, rather strongly near declivity, punctures rather coarse, deep, close; interstriae as wide as striae, rather strongly convex, smooth and shining, each armed by a uniseriate row of moderately high crenulations, each crenulation about two-thirds as wide as interstriae, crenulations spaced in row by distance slightly less than width of an interstriae. Declivity steep, convex; sculpture about as on disc except striae and interstriae distinctly narrower, crenulations narrowed to become rounded tubercles except slightly larger on interstriae 9. Vestiture of interstrial rows of slender setae each as long as distance between rows, much stouter (8-10 times as long as wide) on declivity.

FEMALE.— Similar to male except frons convex, an obscure, shallow median fovea at center, punctures rather sparse, moderately coarse declivital setae not as stout.

TYPE LOCALITY.— Piedras Blancas, 10 km east of Medellin, Antioquia, Colombia.

TYPE MATERIAL.— The male holotype, female allotype, and one female paratype were taken at the type locality on 15-VII-1970, 2500 m, No. 658, from a branch of a tree known locally as Graptero, by me.

The holotype, allotype, and paratype are in my collection.

Phloeotribus squamiger, n. sp.

This species is distinguished from *squam-*

atus Wood by the larger size and by numerous minor characters described below.

MALE.— Length 1.5 mm (paratypes 1.4-1.7 mm), 2.1 times as long as wide; color black with white setae.

Frons as in *squamatus* except slightly more strongly, more uniformly concave, median epistomal tubercle much narrower, slightly higher.

Pronotum as in *squamatus* except shallow punctures more clearly impressed, scales stouter.

Elytra as in *squamatus* except strial punctures evidently slightly larger, scales in interstrial rows stouter, each almost as wide as long.

FEMALE.— Similar to male except frons convex, strongly reticulate, with a few minute granules.

TYPE LOCALITY.— Colonia Tovar, Aragua, Venezuela.

TYPE MATERIAL.— The male holotype, female allotype, and 30 paratypes were taken at the type locality on 4-V-1970, 1700 m, No. 495a, from *Inga* branches, by me. Two paratypes are from La Carbonera Experimental Forest near Merida, Merida, Venezuela, 27-X-1969, 2500 m, No. 89, from a tree seedling, by me.

The holotype, allotype, and paratypes are in my collection.

Phloeotribus hirtus, n. sp.

This species is distinguished from *spinipennis* Eggers by the smaller size, by the unarmed lateral margins of the male frons, by the more coarsely punctured pronotum, and by the very different declivity and vestiture.

MALE.— Length 2.0 mm (paratypes 1.9-2.1 mm), 2.0 times as long as wide; color very dark brown to almost black.

Frons moderately, broadly concave from epistoma to upper level of eyes, lateral margins moderately elevated, unarmed; surface smooth, shining, a few, fine punctures and granules evident; vestiture fine, sparse, inconspicuous. Antennal scape with a small tuft of hair; segments of club about six times as wide as long.

Pronotum shape about as in *spinipennis;* basal half very coarsely, closely, deeply punctured, interspaces smooth, shining, without micropunctures, asperities on anterolateral areas very small, obscure. Vestiture of moderately long, fine hair.

Elytra 1.4 times as long as wide, 1.8 times as long as pronotum; outline about as in *spinipennis;* striae moderately impressed, punctures coarse, deep, close; interstriae as wide as striae, rather strongly convex, smooth shining, tubercles uniseriate, rather small except one or two near margin of declivity rather coarse. Declivity steep, convex; sculpture much as on declivity except striae and interstriae slightly narrower, strial punctures half as large; most interstrial tubercles replaced by punctures, a rather coarse tubercle at base on 3, 5, and 7, at middle on 3 and near apex on 1, 9 acutely, rather strongly elevated and coarsely serrate. Vestiture of slender, erect interstrial hair, each seta at base twice as long as distance between rows, up to four times as long at base of declivity, slightly shorter on lower declivity.

FEMALE.— Similar to male except frons convex, median fovea indefinite, surface strongly reticulate, rather coarsely, closely punctured; tuft of hair on scape absent; setae on elytra slightly shorter.

TYPE LOCALITY.— Caparrapi, Cunadin, Colombia.

TYPE MATERIAL.— The male holotype, female allotype, and eight paratypes were taken at the type locality on 28-V-1959, from Arbol de Sangregao, by A. Diaz.

The holotype, allotype, and paratypes are in my collection.

Phloeotribus fici, n. sp.

This species is distinguished from *hirtus* Wood by the smaller size, by the more shallowly impressed frons, by the shorter elytral setae, and by the coarser declivital tubercles.

MALE.— Length 1.6 mm, 2.0 times as long as wide; color black.

Frons shallowly impressed, almost flat, from epistoma to upper level of eyes, lateral margins weakly elevated at level of antennal insertions, an elongate fovea at middle; surface reticulate, punctures moderately fine, not close, about uniformly dis-

tributed; vestiture fine, short, inconspicuous.

Pronotum about as in *hirtus* except punctures larger, asperities almost obsolete, vestiture mostly abraded.

Elytra about as in *hirtus* except strial punctures smaller, interstriae slightly wider than striae, interstrial tubercles on disc more rounded, those on odd-numbered declivital interstriae larger (those on 1 fine, extend to near apex, on 2 five extend to middle, on 3 two at base of declivity, on 7 three on basal third, on 8 four at base, on 9 strongly, acutely elevated, coarsely serrate, about nine serrations). Vestiture of rows of rather coarse, interstrial bristles, short on basal half, longest setae near declivity about as long as distance between rows, absent on even-numbered declivital interstriae.

TYPE LOCALITY.— Universidad de los Andes Campus, Merida, Merida, Venezuela.

TYPE MATERIAL.— The male holotype was taken at the type locality on 11-IX-1969, 1700 m, No. 5, from *Ficus* bole, by me.

The holotype is in my collection.

Pityophthorus discretus, n. sp.

This species is distinguished from *perotei* Blackman by the larger average size, by the reticulate pronotum which lacks tubercles on the disc, by the more coarsely punctured frons, and by the steeper, more broadly sulcate declivity.

FEMALE.— Length 2.0 mm (paratypes 1.6-2.2 mm), 2.9 times as long as wide.

Frons planoconvex as in *perotei* except more coarsely punctured, vestiture shorter (about two-thirds as long).

Pronotum about as in *perotei* except posterior areas rather strongly reticulate, punctures moderately coarse, deep (tubercles absent).

Elytra about as in *perotei* except disc less shining, almost subreticulate in some specimens; declivity slightly steeper, sulcus slightly deeper and wider.

MALE.— Similar to female except frontal vestiture shorter and apparently less abundant.

TYPE LOCALITY.— Three miles or 5 km W El Salto, Durango, Mexico.

TYPE MATERIAL.— The female holotype, male allotype, and one paratype were taken at the type locality on 7-VI-1965, 2500 m, No. 33, *Pinus ayacahuite*, by me. Other paratypes taken in Mexico by me include: 2 at 29 km or 18 miles W Quiroga, Michoacan, 11-VI-1965, 2300 m, No. 70, *Pinus;* 1 at 9 km or 6 miles E Volcan Paricutin, Jalisco, 19-VI-1965, 2500 m, No. 89, *Pinus;* 1 at 25 km or 14 miles W Texmelucan, Puebla, 14-VII-1953, 2800 m, *Pinus.*

The holotype, allotype, and paratypes are in my collection.